

Developing a Center of Expertise
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Introduction. In April 1990 Huntsville was designated by Headquarters, U.S. Army Corps of Engineers (USACE) as the Mandatory Center of Expertise (MCX) and Design Center for all USACE activities involving ordnance and explosives (OE). This assignment resulted from our experience on several precedent setting ordnance projects. We had recently completed a surface clearance of a demolition area at Hawthorne Army Ammunition Plant in Nevada, coordinated the cleanup of a beach at Martha's Vineyard in Massachusetts using Army and Navy Explosive Ordnance Disposal (EOD) units, conducted a site investigation of an OE site on Kodiak Island in Alaska, and completed surface and subsurface OE clearance at Tidewater Community College in Virginia. We had also completed a Feasibility Study at the Tierrasanta community in San Diego, California, and had just awarded a contract for the surface and subsurface clearance of 1900 acres there. These removal actions attracted high-level attention and demonstrated Huntsville's unique qualifications and expertise in the OE arena.

MCX Responsibilities. The designation as an MCX included the responsibility of developing an overall framework for response for the OE program, along with many other policies and procedures that just did not exist at the time. There was almost no written guidance on how to properly execute OE projects, on how to assess risk, on personnel qualifications needed to ensure safe and efficient execution, on how to contract for the work, or on environmental regulations as they apply to OE work.

Training was needed to ensure that Huntsville personnel were informed on the emerging policies, procedures and guidelines. Personnel from other USACE districts, divisions, and headquarters needed similar training in order to better understand the OE program, to safely avoid OE problems as they went about their hazardous waste and construction projects, and to know where to go for help if OE was encountered.

Roles and responsibilities of various agencies connected with OE activities were in some instances not defined, causing confusion and exasperation among the parties. Agreements were needed with agencies such as Army EOD, Army Environmental Center, and the Program Manager for Non-Stockpile Chemical Materiel.

Design Center Responsibilities. The designation as Design Center included responsibility for all Corps of Engineers OE investigations and removal actions at Formerly Used Defense Sites (FUDS), active sites under the Installation Restoration Program, and Base Realignment and Closure (BRAC) sites. These programs were at first expected to be very limited in scope, as the FUDS inventory at that time had only a few hundred potential OE sites. There are now over 1800 potential OE sites on the FUDS inventory. The total OE budget grew from the original \$2 million for five projects in FY1990 to \$60 million for over 50 projects by FY 1996. Manpower for the MCX and Design Center

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grew from two man-years in FY1990 to 100 man-years by FY 1996.

Early Development. The original Huntsville Division organization for the OE program was basically a three-person project management group with matrixed support from occupational safety and health, engineering and contracting disciplines. One project manager (PM) addressed MCX issues and the other two PMs managed Design Center projects. Still there was no formal OE organization and no clear distinction between the MCX and Design Center.

The original organization relied on active EOD units for ordnance expertise and support. The rapid growth of OE projects outstripped the ability of these units to provide EOD support. Therefore, we at Huntsville began recruiting former EOD personnel to develop our own capability. From only one former EOD person in FY 1990, we expanded to the current count of 20 former EOD personnel. These personnel were instrumental in defining safe procedures for working with OE and establishing minimum qualifications for a new class of contractor personnel, the unexploded ordnance (UXO) specialist.

One of the main concerns with the UXO specialist was how to most efficiently use this resource for quality oversight on active projects. Our policy required that Huntsville UXO safety specialists be present on any site whenever UXO contractors were performing ordnance operations. Although we would have preferred to assign one individual to a site full time, we wanted to ensure that these individuals rotated into the office both to help with the paper workload and to spend time with their families. We settled on an in-house rotation policy of two weeks in the field and one week at the office. Scheduling of field time was a major effort. Although we tried very hard to maintain the two week/one week ratio, often the UXO personnel were required to stay in the field for four and even six weeks without relief. Much to the credit of the profession, the typical UXO specialist bore this inconvenience without complaint.

As Design Center responsibilities expanded exponentially, the ability to fulfill MCX responsibilities diminished. Personnel were not available to address MCX issues because they were always committed to executing projects already underway. The MCX and Design Center were generally still viewed as one unit with one function: to execute projects. Therefore, early MCX procedures and policies were usually developed only after issues became too serious to ignore, and were limited to bare necessities. Early coordination with other agencies such as EOD units and the U.S. Army Technical Escort Unit was inconsistent, and led to confusion between USACE and the EOD command structure. Training was limited to safety issues such as ordnance recognition. New technology was used on actual projects if it showed promise, but resources weren't available to validate new systems before fielding them.

Reorganization. After several attempts at reorganization, we finally found a satisfactory organizational structure, identifying dedicated MCX personnel and separating them from Design Center personnel. At that point the new MCX was able to focus on satisfying the documentation, training, technology and coordination needs of the ordnance program.

Under the new organizational structure we began to make great strides in planning our approach to formalization of the OE Program. We were able to finalize the family of documents supporting our

Management Plan. This family of documents consisted of systems safety, quality management, training, and innovative technology program plans. Numerous interim policies and procedures documents were also completed to standardize processes and products. These documents defined our response process, anomaly review boards, restoration advisory boards, administrative records, public involvement, and many other processes affecting OE work. In the Spring of 1995 we began the conversion of this interim guidance into more formal policies and procedures for approval at Headquarters level. Interim guidance is now being converted to Engineering Regulations, Engineering Pamphlets, and Engineering Technical Letters. Appendix A lists the formal documentation developed by Huntsville for HQUSACE review, most of them in the first six months after reorganization.

A concentrated training program was devised to get the word out to the entire Corps of Engineers, which often didn't seem to know that Huntsville existed or that we had an ordnance mission. Over a two-year period, more than a dozen workshops were conducted to educate USACE personnel on the goals of the OE program, policies and procedures, how an OE project is executed, OE recognition and safety, community relations, how to get assistance from Huntsville and EOD when ordnance is discovered, and many other topics. This effort has been instrumental in convincing the various USACE districts that they benefit from coordination with Huntsville. This spring we presented the first of many workshops focused on recovered chemical warfare materiel.

Besides the workshops, OE overviews are provided for several of the Corps of Engineers PROSPECT training courses. Our current priority for training focuses on development of a refresher training school for UXO specialists, both government and contractor. Our goal is to establish certification procedures that ensure a reliable, safety-conscious work force.

Our reorganization also established a distinct MCX working group responsible for innovative technology. The goal of this group is to apply and integrate existing technology across all phases of the OE program. Among the more noteworthy products of the technology program are: computer software (OECert) for risk-based management and decision making; software (GridStats and SiteStats) to enable statistical sampling for OE; blast-effects modeling for design of barriers and containers for blast and fragmentation suppression and containment; integration of Geographic Information System (GIS) and a UXO Discrimination Knowledgebase for site characterization and removal management; and an Internet Homepage for sharing MCX and Design Center products and information. These initiatives and others contribute greatly to reaching our goals of maximizing efficiency, reducing costs and maintaining our high degree of safety.

Our quality management program provides for three levels of quality assurance. The lowest, or individual project level, has been in place since the beginning. It requires contractors to establish a quality control plan which they must follow and which we monitor with our quality assurance measures. The middle level, which is not yet fully in place, requires government personnel to develop programmatic quality assurance plans to ensure that we are prepared to monitor the quality of all products and processes of the ordnance program. The highest level is ISO 9000, which we are just now beginning to implement.

Another of our initiatives has been to market the expertise and capabilities of the MCX and Design Center. Personnel are being encouraged to prepare and present papers at conferences related to the

ordnance program. We have representation on various steering committees and associations that have a stake in this now highly-visible program. Partnerships were developed with USADACS, PMCD, FORSCOM EOD, and USAEC that helped to raise issues to higher levels for resolution, and also to clearly define respective roles in the OE program. A storyboard was developed to document and explain to decision makers the various issues affecting successful execution of an OE program. Wherever possible, we injected our organization into the rule-making process in order that the decision-makers have the best possible perspective of the effect their policies have on the actual field work.

Contracting methods have evolved rather quickly over the few years we've been in existence. From the original firm fixed-price (FFP) construction contract for ordnance removal we learned a lot, mainly that FFP contracts are not well suited to projects where you can't predict with any degree of certainty the amount of work that is involved. Our next iteration in ordnance removal contracts was to establish two Indefinite Delivery Order Time and Materiel (T&M) contracts of \$5 million capacity each. Program growth quickly outstripped contract capacity, and the next year we began soliciting for several IDO Time & Materiel contracts in the \$29 million range. We found T&M to be an ideal format for ordnance removals although they require intensive monitoring. We also found that a lot of companies are not adept at tracking real-time expenditures in order to prevent overspending. Not only was there a learning curve for government personnel for this type of contract, but we also had to guide many contractors through the unfamiliar territory of T&M contracts. Our current thrust is to award a \$100 million small business set-aside, indefinite delivery contract to handle ordnance removal services for the entire United States. This contract will allow us to task work out under fixed price, time and materials, or cost plus fixed fee task orders.

For ordnance investigations we found the conventional Architect Engineer (A-E) fixed-price service contracts to be clumsy for our work, because again we could seldom estimate the effort it would take to characterize an ordnance site. We switched to cost plus fixed-fee A-E contracts which required the A-E firms with design/investigation experience to team with ordnance firms to ensure safe investigations. The current A-E contracts are \$30 million to \$50 million capacity and divide the country into three regions. Our contract evaluation process considers past performance and allows for oral interviews and presentations.

Lessons Learned. The many successes of the CX have resulted from a combination of foresight, lessons learned and sometimes sheer determination. Foresight led to development of management plans to ensure safe operations, quality products and services, a trained workforce, and application of the best available technology. A few of the more notable lessons learned are as follows:

- a. Early projects concentrated on getting an OE removal action started as soon as possible, with the intent of clearing the property completely. The unknown extent of OE anomalies almost always drove costs far beyond government estimates and left us scrambling for funds and greater contract capacity. We learned that it is usually more prudent to study the site, analyze various approaches to cleanup, and then select the best alternative. A major premise of this lesson is that there is not enough money to completely eliminate the ordnance risk, but rather we must learn to manage risk.
- b. Some DOD installations and USACE districts are very resistant to the idea of holding public

meetings when ordnance projects are planned. We have learned that the earlier we inform the public about our actions, the better we fare. The headlines are usually more damaging when the public finds out that the installation or USACE district withheld information. For that reason we are strong supporters of the concepts of public meetings and media days for each of our projects. In addition, we support involvement of all the stakeholders in our decision-making process by setting up restoration advisory boards for large or controversial projects.

c. Architect-Engineer firms lost the option of conducting archives searches because they appeared unable to recommend no further action where it was merited. They always recommended further investigation and gave the appearance of lobbying for more work. We gave the work to St. Louis and Rock Island Districts in order to get more objective recommendations.

d. Finding a balanced application for both A-E firms and OE specialty firms was difficult at first. Architect-Engineer firms proved appropriate for engineering studies of ordnance sites mainly because of their skills in writing environmental reports, but proved weak inability to effectively manage OE removal actions. OE specialty firms are now required to be prime contractors for removal actions. A-E firms are prime contractors for investigations, and are often teamed with OE subcontractors who execute the fieldwork.

e. We have to educate others as to our policies and procedures and be constantly vigilant in enforcing those policies and procedures. For example, various USACE geographic districts which are familiar with hazardous waste processes have a hard time understanding our insistence on no permits for on-site treatment of OE. Also, project managers are tempted to label an action as time-critical simply because a property owner is yelling at his congressman, forgetting that time-critical is intended for sites where there is immediate danger of injury.

Conclusion. The CX is still in evolution. Huntsville is moving towards a self-directed team environment, and this initiative can detract at times from the OE mission. We are discussing decentralization with Headquarters, whether or not the program is large enough to establish other design centers or execution districts within the Corps of Engineers. Such a decision will require us to refocus our efforts towards getting policies formalized, evaluating USACE district capabilities, and training the districts.

Whatever the difficulties we have faced in the past, personal commitment to the program has resulted in success. Most of the OE personnel weather the storms because they believe in the OE program, that they are performing a worthwhile service for their country. Our challenge as the Center of Expertise for OE is to ensure a dynamic, effective OE program through technology, training, and quality oversight in a global teaming environment.